Claims

Jul.

1. Testosterone derivatives of general formula I

in which

 R^6 represents a hydrogen atom, a hydroxy group, a C_1 - C_{10} alkoxy group, a C_1 - C_{10} alkanoyloxy group or a halogen atom,

 R^{15} and R^{16} each are a hydrogen atom or together form a bond, R^{17a} represents a C_1 - C_4 alkyl group, a C_2 - C_4 alkinyl group, or a radical of Formula $C_nF_mH_o$, whereby n=1, 2, 3 or 4, m>1 and m+o=2n+1,

 R^{17b} is a hydroxy group, a C_1-C_{10} alkoxy group or a C_1-C_{10} alkanoyloxy group,

A is an unbranched $C_6 - C_{13}$ alkylene group,

represents an oxygen atom, a grouping $-S(O)_p$, whereby p = 0, 1 or 2, an iminocarbonyl group -C(O)N(Y), an imino group -N(Y), a carbonylimino group -N(Y)C(O), a sulfonylimino group $-N(Y)S(O)_2$, whereby Y is a hydrogen atom or a C_1 - C_8 alkyl group, a sulfonyloxy group $-OS(O)_2$, a dimethylsilyloxy group $-O-Si(CH_3)_2$ - or

a carbonylsulfanyl group -SC(O) , or B represents a bond between A and C or together with C forms a bond between A and D,

represents a bond between B and D, or together with B forms a bond between A and D or an unbranched C₁-C₆ alkylene group, a phenylene group, a substituted phenylene group, a five-ring or six-ring heteroarylene group, a substituted five-ring or six-ring heteroarylene group or a five-ring or six-ring heteroarylene group that is condensed with a phenyl ring,

and

- represents a hydrogen atom, a C_1 - C_4 alkyl group, a vinyl group, a C_1 - C_4 alkoxy group, a C_1 - C_4 alkoxycarbonyl group, a bis $(C_1$ - C_4 alkoxycarbonyl) methyl group, an acetyl $(C_1$ - C_4 alkoxycarbonyl) methyl group, a cyano group, a carboxy group, an azide group, a hydroxy group, a halogen atom or a radical of formula $C_nF_mH_0$, whereby n = 1, 2, 3 or 4, m > 1 and m+o=2n+1.
- 2. Testosterone derivatives according to claim 1, characterized in that R^{17a} represents the methyl group, the ethyl group, the trifluoromethyl group or the pentafluoroethyl group.
- 3. Testosterone derivatives according to claim 1 or 2, wherein R^{17b} is the hydroxy group, a C_1 - C_5 alkoxy group or a C_1 - C_3 alkanoyloxy group.
- 4. Testosterone derivatives according to claim 3, wherein R^{17b} is the hydroxy, methoxy, ethoxy or acetyloxy group.

one

- 5. Testosterone derivatives according to one of claims 1 to 4, wherein R⁶ represents a hydrogen atom, the hydroxy group or a halogen atom.
- 6. Testosterone derivatives according to one of claims 1 to 5 , wherein R^{15} and R^{16} each represent a hydrogen atom.
- 7. Testosterone derivatives according to one of claims 1 to 6, wherein radical ABCD means 9-hydroxynonyl, 7- (acetylsulfanyl)heptyl or 7-(4-cyanobutoxy)heptyl.
- 8. Testosterone derivatives according to one of claims 1 to 6, wherein the five-ring- or six-ring-heteroaromatic compounds of radical C are pyrrole, thiophene, imidazole, thiazole, oxazole, triazole, thiadiazole, indole, benzoxazole, benzothiazole, pyridine, or pyrimidine.
- 9. Testosterone derivatives according to one of claims 1 to 8, wherein they represent the following compounds:

 7α -(9-Chlorononyl)-17 α -methyl $\sqrt{3}$ -oxoandrost-4-en-17 β -yl-acetate

 7α - (9-Chlorononyl) -17ß-hydroxy-17 α -methylandrost-4-en-3-one 17ß-Hydroxy-7 α - (9-iodononyl) -17 α -methylandrost-4-en-3-one 17ß-Hydroxy-7 α - (9-hydroxynonyl) -17 α -methylandrost-4-en-3-one 7 α - (10-Chlorodecyl) -17ß-hydroxy-17 α -methylandrost-4-en-3-one 17ß-Hydroxy-7 α - (11-hydroxyundecyl) 17 α -methylandrost-4-en-3-

 7α -(11-Bromoundecyl)-17ß-hydroxy-17 α -methylandrost-4-en-3-one

17ß-Hydroxy-17 α -methyl-7 α -[7-(phenylsulfanyl)heptyl]androst-4-en-3-one

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17ß-Hydroxy-17\alpha-methyl-7\alpha + [9-[(4,4,5,5,5,5-
     pentafluoropentyl) sulfanyl] nonyl] androst-4-en-3-one
           17\beta-Hydroxy-17\alpha-methyl-7\alpha-[9-(phenylsulfanyl)nonyl]androst-
     4-en-3-one
            7\alpha-[9-[(5-Chloropentyl)sulfanyl]nonyl]-17\(\mathbf{G}\)-hydroxy-17\(\alpha\)-
      methylandrost-4-en-3-one
           17ß-Hydroxy-7\alpha-[9-[(5-hydroxypentyl)sulfanyl]nonyl]-17\alpha-
     methylandrost-4-en-3-one
           7\alpha-(9-Azidononyl)-17ß-hydroxy-17\alpha-methylandrost-4-en-3-one
           7\alpha-[7-(Acetylsulfanyl)heptyl]-17\(\mathbf{B}\)-hydroxy-17\(\alpha\)-methylandrost-
     4-en-3-one
SECOCOL CEEDOL
           17ß-Hydroxy-17\alpha-methyl-7\alpha-[7-[(4,4,5,5,5-
     pentafluoropentyl)sulfanyl]heptyl]androst-4-en-3-one
           N-[7-(17\mathbb{G}-Hydroxy-17\alpha-methyl-3-oxoandrost-4-en-7\alpha-
     yl)heptyl]pentanamide
           17ß-Hydroxy-17\alpha-methyl-3-oxoandrost-4-en-7\alpha-octane nitrile
           5-[[7-(17\mathbf{G}-Hydroxy-17\alpha-methyl-3-oxoandrost-4-en-7\alpha-
     yl) heptyl] oxy] pentanenitrile
           17ß-Hydroxy-17\alpha-methyl-7\alpha-[9-[(4,4,5,5,5-
     pentafluoropentyl)sulfinyl]nohyl]androst-4-en-3-one
           N-[9-(17\Lambda-Hydroxy-17\alpha-methyl-3-oxoandrost-4-en-7\alpha-
     yl)nonyl]methanesulfonamide
           7\alpha-(9-Chlorononyl)-6ß-hydroxy-17\alpha-methyl-3-oxoandrost-4-en-
     17ß-yl-acetate
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10. Use of the testosterone derivatives of general formula

in which

Ι

 R^6 represents a hydrogen atom, a hydroxy group, a C_1 - C_{10} alkoxy group, a C_1 - C_{10} alkanoyloxy group or a halogen atom,

 R^{15} and R^{16} each are a hydrogen at ϕm or together form a bond,

- represents a C_1 - C_4 alkyl group, a C_2 - C_4 alkinyl group, or a radical of Formula C_n F H_o , whereby n = 1, 2, 3 or 4, m > 1 and m+o=2n+1,
- R^{17b} is a hydroxy group, a C_1-C_{10} alkoxy group or a C_1-C_{10} alkanoyloxy group,
- A is an unbranched C_6-C_{13} alkylene group,
- represents an oxygen atom, a grouping $-S(O)_p$, whereby p = 0, 1 or 2, an iminodarbonyl group -C(O)N(Y), an imino group -N(Y), a carbonylimino group -N(Y)C(O), a sulfonylimino group $-N(Y)S(O)_2$, whereby Y is a hydrogen atom or a C_1 - C_3 alkyl group, a sulfonyloxy group $-OS(O)_2$ -, a dimethylsilyloxy group $-O-Si(CH_3)_2$ or a carbonylsulfanyl group -SC(O)-, or B represents a

bond between A and C or together with C forms a bond between A and D,

represents a bond between B and D, or together with B forms a bond between A and D or an unbranched C_1 - C_6 alkylene group, a phenylene group, a substituted phenylene group, a five-ring or six-ring heteroarylene group, a substituted five-ring or six-ring heteroarylene group or a five-ring or six-ring heteroarylene group that is condensed with a phenyl ring,

and

represents a hydrogen atom, a C_1 - C_4 alkyl group, a vinyl group, a C_1 - C_4 alkoxy group, a C_1 - C_4 alkoxycarbonyl group, a bis $(C_1$ - C_4 alkoxycarbonyl) methyl group, an acetyl $(C_1$ - C_4 alkoxycarbonyl) methyl group, a cyano group, a carboxy group, an azide group, a hydroxy group, a halogen atom or a radical of formula $C_nF_mH_0$, whereby n = 1, 3, 3 or 4, m > 1 and m+o=2n+1

for long-term antiandrogen therapy for androgen-dependent diseases.

- 11. Use according to claim 10, wherein the testosterone derivatives are used for long-term therapy for prostate cancer.
- 12. Use according to dlaim 10 or 11, wherein the testosterone derivatives that are described in more detail in claims 2 to 9 are used.
- 13. Pharmaceutical agents that contain at least one testosterone derivative of general formula I according to claims

1 to 9 and physiologically compatible adjuvants and/or vehicles that are commonly used in galenicals.